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REMARKS

This response is intended as a full and complete response to the final Office Action mailed May 3, 2005. In the Office Action, the Examiner notes that claims 1-15 are pending and rejected. By this response, claim 3 is cancelled and claims 1, 4, 9, 11, and 13 are amended. Claims 2, 5-8, 10, 12, and 14-15 continue unamended. No new matter has been entered.

In view of both the amendments presented above and the following discussion, Applicants submit that none of the claims now pending in the application are anticipated or obvious under the respective provisions of 35 U.S.C. §102 and 103.

It is to be understood that Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant responsive amendments.

Applicants' Representative thanks Examiner John Pezzlo for the telephone conversation of June 23, 2005 to discuss Applicants' case. Applicants' Representative is aware of the time constraints placed on the Examiner and appreciates the opportunity to bring the outstanding issues to quick resolution in this manner. During the discussion, the Examiner indicated that amendment of Applicants' independent claims to include a limitation that the frequency gap is defined by filtering a frequency minima in the prescribed frequency bandwidth will overcome the Geile reference currently cited against Applicants' claims since the Geile reference fails to teach or suggest a frequency minima and the filtering of the frequency minima to define a frequency gap for the transmission of control information.

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REJECTIONS

35 U.S.C. §102

Claims 1-5 and 8-13

The Examiner has rejected claims 1-5 and 8-13 under 35 U.S.C. §102(e) as being anticipated by Geile et al. (U.S. 6,279,158 B1, hereinafter "Geile"). The Applicants respectfully traverse the rejection.

In general, Geile teaches a hybrid fiber/coax distribution network including a head end providing downstream transmission of telephony and control data in a first frequency bandwidth, and reception of upstream telephony and control data in a second frequency bandwidth. (Geile, Abstract). In particular, Geile discloses that control channels are interspersed among telephony information channels of both the first frequency bandwidth and the second frequency bandwidth. (Geile, Summary).

Geile, however, does not teach or suggest each and every element of Applicants' invention as recited in independent claim 1, as amended. In particular, Geile fails to teach or suggest at least the limitation "wherein a frequency gap is defined within the frequency bandwidth by filtering a frequency minima within the frequency bandwidth." Specifically, Applicants' invention of claim 1 positively recites:

"A method for transport of control information and data over a data link, comprising:

generating a signal by combining the control information with the data, wherein the data is transmitted within a prescribed frequency bandwidth, wherein a frequency gap is defined within the frequency bandwidth by filtering a frequency minima within the frequency bandwidth, wherein control information is transmitted over the data link within the frequency gap, and wherein the data handling capacity of the data link is maintained."

(Emphasis added.)

As evident from Applicants' disclosure and claims, Applicants' invention is directed, at least in part, to a method and apparatus for transport of control information and data over a data link. In particular, Applicants' invention of at least claim 1 teaches generating a signal by combining the control information

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with the data, wherein the data is transmitted within a prescribed frequency bandwidth, wherein a frequency gap is defined within the frequency bandwidth, and wherein the frequency gap is defined by filtering a frequency minima within the frequency bandwidth.

Geile, on the other hand, teaches that a plurality of orthogonal carriers in a frequency bandwidth include a plurality of telephony information channels for transmission of upstream telephony information after modulation of telephony information thereon, and at least one control channel associated with the plurality of telephony channels for transmission of control data thereon. Nowhere in Geile is there any teaching or suggestion of transmission of control information within a frequency gap in a prescribed frequency bandwidth, where the frequency gap is defined by filtering a frequency minima within the frequency bandwidth.

Rather, Geile is directed towards the allocation of bandwidth among a plurality of service units. As taught in Geile, a transmission channel includes a number of subbands, where each subband includes a number of payload channels and an associated control channel. In particular, as taught in Geile, the interspersion of control channels among payload channels is performed according to a defined subband structure depicted and described with respect to FIG. 13 of Geile. The use of this defined subband structure for transmission of control information interspersed among payload information, as taught in Geile, does not teach or suggest transmission of control information within frequency gaps defined by filtering a frequency minima within a frequency bandwidth, as taught in Applicants' invention of at least claim 1.

Geile is completely devoid of any teaching or suggestion of frequency minima, much less of identifying frequency minima within a frequency bandwidth. Since Geile fails to teach or suggest such frequency minima, Geile must also fail to teach or suggest filtering such frequency minima to define a frequency gap within a frequency bandwidth.

Furthermore, in the Office Action, the Examiner cites Fig. 13 of Geile for teaching the frequency minima of Applicants' invention of at least claim 1. As

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described above and depicted and described in Geile with respect to FIG. 13, however, FIG. 13 of Geile merely discloses a defined subband format for transmission of control information and payload information. In particular, with respect to FIG. 13, Geile specifically recites:

"Referring to FIG. 13, the spectrum allocation for one 6 MHz band for upstream and downstream transport of telephony information and control data utilizing OFDM techniques is shown. The waveform preferably has 240 payload channels or DS0+channels which include 480 carriers or tones for accommodating a net data rate of 19.2 Mbps, 24 IOC channels including 46 carriers or tones, and 2 synchronization channels. Each synchronization channel includes two carriers or tones and is each offset from 24 IOC channels and 240 payload channels by 10 unused carriers or tones, utilized as guard tones. The total carriers or tones is 552. The synchronization tones utilized for synchronization functions as described further below are located at the ends of the 6 MHz spectrum and the plurality of orthogonal carriers in the 6 MHz band are separated from carriers of adjacent 6 MHz bands by guard bands (516.0 kHz) at each end of the 6 MHz spectrum. The guard bands are provided at each end of the 6 MHz band to allow for filter selectivity at the transmitter and receivers of the system." (Geile, Col. 41, Lines 1-19).

As such, Geile merely teaches a fixed spectrum allocation for transmitting interspersed payload and control information. In particular, Geile discloses a 6 MHz channel having 240 payload channels, 24 IOC control channels, 2 synch channels, 20 guard tones, and associated 516 kHz guard bands. As shown in FIG. 13 of Geile and described in Geile with respect to FIG. 13, however, there are no frequency minima associated with the fixed spectrum allocation. Rather, as taught in Geile, control information is inserted in specific positions within the fixed spectrum allocation. Thus, Geile fails to teach or even suggest that the control information is transmitted over the data link within a frequency gap defined by filtering a frequency minima within the frequency bandwidth.

As such, Geile is completely devoid of any teaching or suggestion of at least the limitation "wherein a frequency gap is defined within the frequency bandwidth by filtering a frequency minima within the frequency bandwidth," as

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taught in Applicants' invention of at least claim 1. Thus, since Geile fails to teach or suggest "wherein a frequency gap is defined within the frequency bandwidth by filtering a frequency minima within the frequency bandwidth," Geile fails to teach each and every element of the claimed invention, as arranged in the claim.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Geile reference fails to disclose each and every element of the claimed invention, as arranged in the claim. As such, Applicants submit that independent claim 1 is not anticipated by Geile and fully satisfies the requirements of 35 U.S.C. §102 and is patentable thereunder.

Furthermore, independent claims 9, 11, and 13 recite apparatus and methods having features substantially similar to the relevant features of claim 1, emphasized above. As such, for the reasons discussed above, the Applicants respectfully submit that since Geile does not teach or suggest each and every element as recited in Applicants' claim 1, Geile cannot teach each and every element of independent claims 9, 11, and 13. Specifically, Geile does not teach or suggest at least the similar limitation of "filtering out frequency minima from said analog signal to define respective frequency gaps within said analog signal." Therefore, the Applicants submit that claims 9, 11, and 13 are not anticipated by Geile and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder.

Furthermore, claims 2, 4-5, 8, 10, and 12 depend, either directly or indirectly, from independent claims 1, 9, 11, and 13 and recite additional features thereof. As such, and at least for the same reasons as discussed above, the Applicants submit that these dependent claims are also not anticipated and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder. Thus, Applicants respectfully request that the Examiner's rejection be withdrawn.

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35 U.S.C. §103

Claims 6, 7, 14 and 15

The Examiner has rejected claims 6-7 and 14-15 as being unpatentable over Geile under 35 U.S.C. §103. The Applicants respectfully traverse the rejection.

Claims 6-7 and 14-15 depend from independent claims 1 and 13, respectively, and recite additional features therefor. As discussed above with respect to claims 1 and 13, Geile does not teach or suggest at least the limitation of "wherein a frequency gap is defined within the frequency bandwidth by filtering a frequency minima within the frequency bandwidth." As such, Geile fails to teach or suggest all of the elements of Applicants' claims 6-7 and 14-15.

As such, and at least for the same reasons as discussed above, Applicants submit that these dependent claims are also not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, Applicants respectfully request that the Examiner's rejection be withdrawn.

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CONCLUSION

Thus, the Applicants submit that the pending claims are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

6/30/05

E J Wall

Eamon J. Wall, Attorney
Reg. No. 39,414
(732) 530-9404

Moser, Patterson & Sheridan, LLP
Attorneys at Law
595 Shrewsbury Avenue, Suite 100
Shrewsbury, New Jersey 07702